The corporation of the institute has recently met a disastrous defeat in its attempt to form a merger with Harvard University against the wishes of the faculty and alumni. Should it be so ill-advised as to elect a president without consultation with the faculty, it is to be hoped that Professor West will not accept until he assures himself of their approval. It is indeed quite possible that the election will be welcomed by the faculty, and that they will obtain a president beyond reproach—in which case science will have captured a captain from the enemy's camp.

J. McKeen Cattell.

SPECIAL ARTICLES.

A SIMPLE METHOD OF ILLUSTRATING UNIFORM ACCELERATION.

The following method of illustrating in the presence of a class (or as a simple laboratory exercise) the principle of uniformly accelerated motion exceeds in simplicity, accuracy and interest any that I have hitherto found.

A ball rolling down a groove in an inclined plank and at the same time vibrating across the groove has a constant acceleration in one direction, while its transverse vibrations are pendular motions that mark the time. If the groove be painted black and well polished, lycopodium dusted on the groove will preserve a very sharp trace of the motion of the ball. When the powder has been blown off by a wave of a fan the trace comes out with the distinctness of a sharp chalk line. The distances traversed in successive vibrations of the ball are measured along a white thread stretched accurately in the middle of the groove (or along a white paint line). The two motions should start simultaneously in the middle of the groove; this may be secured by allowing the ball to roll initially along a transverse brass strip extending to the middle of the groove.

The frictional resistance to the motion of the ball is negligible and the constancy of the ratio of linear distance to square of number of vibrations depends only on the accuracy of the measurements and the straightness of the plank.

To illustrate the principle of constant acceleration the actual period of vibration of the ball is not required; but it may be found by observation or by timing a short pendulum that vibrates in unison with the ball. The linear acceleration of the ball can readily be shown to be $5/7\ g$ sin (inclination of plank). The vibrating ball is a simple pendulum of length equal to the distance from the center of the ball to the center of curvature of the groove; but, to calculate the period, $5/7\ g$ must be used instead of g.

Several other points of interest may be noted. The record may be obtained by dusting the powder on the groove *after* the ball has rolled down. The record can only be completely removed by a damp cloth. The track of the ball on the powder is very curious and interesting, consisting of a ridge of powder with a clearing on each side. A very striking lecture experiment is to use fine sulphur powder instead of lycopodium; if the plank be raised to a vertical position, and brought down sharply on the table the record will appear instantaneously. If the plank be horizontal, the path of the ball will be a nearly perfect simple harmonic wave. If the grooved plank be placed on an inclined-plane plank, the coefficient of kinetic friction between the two may be deduced from two records, the first with the grooved plank held at rest, the second with the grooved plank in sliding motion.

I have found a groove five feet long, four inches wide and of four inches radius and a steel ball one and a half inches in diameter very satisfactory. The groove could be chipped out in a moment on a molding machine with knives of sufficient size; but, in the absence of such facilities, a number of longitudinal saw cuts of graduated depth, made by a circular saw, will render it easy to chisel the groove out by hand.

The International Instrument Co., of Cambridge, Mass., will supply the above apparatus on order.

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